

Ga₂O₃ thin films by sol-gel method its optical properties

Abstract

Gallium (III) oxide Ga₂O₃ is emerging in the field of wide bandgap semiconductor for various applications such as solar-blind photodetectors et al. because of its wide bandgap. For this reason, the optical properties of Ga₂O₃ by sol-gel method are analyzed. Ga₂O₃ thin films are prepared by spin coating method. The annealing temperature to make α-Ga₂O₃ is in the range of 450°C-550°C, where after 550°C, β-Ga₂O₃ is obtained as reported in reviewed works. Therefore, annealing temperatures of samples are set at 500°C, 700°C and 900°C. X-ray diffraction is performed to characterize the structure of the sample. The optical bandgap of Ga₂O₃ is calculated based on the transmittance value measured from UV-Visible spectrophotometer, which range from 4.8eV to 5.0eV.